

Sequence Protocol

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Bremerhaven, Germany

<120>A novel nucleic acid sequence coding for a calpain protease from the
coldness-adapted marine *fragilariopsis cylindrus* diatom

<130>AWI 01/0902 DE

<160>4

<210>1

<211>544

<212>DNA

<213>Fragilariopsis cylindrus

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gg gaa ttc ggc ctt acg gcc ggg gat gat gga atg ttc tgg att agt 47
Glu Phe Gly Leu Thr Ala Gly Asp Asp Gly Met Phe Trp Ile Ser
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tgg gag gat gtc ttg ctt tat ttc cgc aat tta caa tta tca tgg aat 95
Trp Glu Asp Val Leu Leu Tyr Phe Arg Asn Leu Gln Leu Ser Trp Asn
20 25 30

ccc aaa cta ttt gcg tat cgg atg act act cat ggc tta tgg cca aag 143
Pro Lys Leu Phe Ala Tyr Arg Met Thr Thr His Gly Leu Trp Pro Lys
35 40 45

gat cag gga cca caa aat gat gca ttt aat gtc gga gag aat cca caa 191
Asp Gln Gly Pro Gln Asn Asp Ala Phe Asn Val Gly Glu Asn Pro Gln
50 55 60

tat atc atg tct ttc tcc gaa aaa gct gta tcg agt aaa cca acg att 239
Tyr Ile Met Ser Phe Ser Glu Lys Ala Val Ser Ser Lys Pro Thr Ile
65 70 75

tgg gta ctg ata tca agg cat gta agc aaa cag gag caa gaa ggt gct 287
Trp Val Leu Ile Ser Arg His Val Ser Lys Gln Glu Gln Glu Gly Ala
80 85 90 95

gag gtg aat gat ttc tta acc ata cat ctc gtt aga aac tcg gct aca 335
Glu Val Asn Asp Phe Leu Thr Ile His Leu Val Arg Asn Ser Ala Thr
100 105 110

tta gaa aga gtt tgg tat ccc cat gga aaa gca acg att gct aat gga 383
Leu Glu Arg Val Trp Tyr Pro His Gly Lys Ala Thr Ile Ala Asn Gly

115 120 125
 tgc tat aca aac aat cca cac gtg ctt tta cga tac gat gtt tcc gga 431
 Cys Tyr Thr Asn Asn Pro His Val Leu Leu Arg Tyr Asp Val Ser Gly
 130 135 140

cct gaa gat caa ttt atc tcg tta gta ctg tct caa cac gaa aaa act 479
 Pro Glu Asp Gln Phe Ile Ser Leu Val Leu Ser Gln His Glu Lys Thr
 145 150 155

caa gat cta tca tac act ctc tct tgt tac tgt acc gaa ccc ttt aca 527
 Gln Asp Leu Ser Tyr Thr Leu Ser Cys Tyr Cys Thr Glu Pro Phe Thr
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 <213>Fragilariopsis cylindrus

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Trp Glu Asp Val Leu Leu Tyr Phe Arg Asn Leu Gln Leu Ser Trp Asn
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Pro Lys Leu Phe Ala Tyr Arg Met Thr Thr His Gly Leu Trp Pro Lys
 35 40 45

Asp Gln Gly Pro Gln Asn Asp Ala Phe Asn Val Gly Glu Asn Pro Gln
 50 55 60

Tyr Ile Met Ser Phe Ser Glu Lys Ala Val Ser Ser Lys Pro Thr Ile
 65 70 75

Trp Val Leu Ile Ser Arg His Val Ser Lys Gln Glu Gln Glu Gly Ala
 80 85 90 95

Glu Val Asn Asp Phe Leu Thr Ile His Leu Val Arg Asn Ser Ala Thr
 100 105 110

Leu Glu Arg Val Trp Tyr Pro His Gly Lys Ala Thr Ile Ala Asn Gly
 115 120 125

Cys Tyr Thr Asn Asn Pro His Val Leu Leu Arg Tyr Asp Val Ser Gly
130 135 140

Pro Glu Asp Gln Phe Ile Ser Leu Val Leu Ser Gln His Glu Lys Thr
145 150 155

Gln Asp Leu Ser Tyr Thr Leu Ser Cys Tyr Cys Thr Glu Pro Phe Thr
160 165 170 175

Leu Gly Arg Pro Pro
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<212>DNA

<213>Fragilariopsis cylindrus

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Ser Val Asn Tyr Pro Val Lys Asp Pro Phe Asn Gln Met Lys Arg Gly
20 25 30

tca ctt caa acc tac tca gat tca tgg acc gaa cgg gat cgt acc tca 144
Ser Leu Gln Thr Tyr Ser Asp Ser Trp Thr Glu Arg Asp Arg Thr Ser
35 40 45

ttt gtc atg gca tca cgt aac tta gcc gat ttt cgt aat aac gtg aag 192
Phe Val Met Ala Ser Arg Asn Leu Ala Asp Phe Arg Asn Asn Val Lys
50 55 60

gta acg atc gat gct gtt ttt aat cca ctt ttt atc aac gag gaa tac 240
Val Thr Ile Asp Ala Val Phe Asn Pro Leu Phe Ile Asn Glu Glu Tyr
65 70 75 80

aaa tgg atc ttt cgt caa gaa ggc tgg agg tta gag aca cct gac aat 288
Lys Trp Ile Phe Arg Gln Glu Gly Trp Arg Leu Glu Thr Pro Asp Asn
85 90 95

gtc aac cta ctt atc aat ggg aac gct tat gta aac gct aag gcc gac 336
Val Asn Leu Leu Ile Asn Gly Asn Ala Tyr Val Asn Ala Lys Ala Asp
100 105 110

cag atg gac ccc caa gag gtt atg ata aag caa atc tac agc aat ctc 384
 Gln Met Asp Pro Gln Glu Val Met Ile Lys Gln Ile Tyr Ser Asn Leu
 115 120 125

ttt gct gat cac gtg tat agc aaa agt cca aaa gga gac gcc gcc caa 432
 Phe Ala Asp His Val Tyr Ser Lys Ser Pro Lys Gly Asp Ala Ala Gln
 130 135 140

gta gtc acc atg aca ttg gca cca agg gcg aat tct gca gat atc cat 480
 Val Val Thr Met Thr Leu Ala Pro Arg Ala Asn Ser Ala Asp Ile His
 145 150 155 160

cac act ggc ggc cgt ctc gag cat gca tct aga ggg ccc aat tcg ccc 528
 His Thr Gly Gly Arg Leu Glu His Ala Ser Arg Gly Pro Asn Ser Pro
 165 170 175

tat agt gag tcg tat t 544
 Tyr Ser Glu Ser Tyr
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<212>DNA

<213>Fragilariopsis cylindrus

<400>4

Ser Asn Asp Gly Ala Gln Tyr Val Val Glu Lys Ser Ile Leu Val Gly
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Ser Val Asn Tyr Pro Val Lys Asp Pro Phe Asn Gln Met Lys Arg Gly
 20 25 30

Ser Leu Gln Thr Tyr Ser Asp Ser Trp Thr Glu Arg Asp Arg Thr Ser
 35 40 45

Phe Val Met Ala Ser Arg Asn Leu Ala Asp Phe Arg Asn Asn Val Lys
 50 55 60

Val Thr Ile Asp Ala Val Phe Asn Pro Leu Phe Ile Asn Glu Glu Tyr
 65 70 75 80

Lys Trp Ile Phe Arg Gln Glu Gly Trp Arg Leu Glu Thr Pro Asp Asn
 85 90 95

Val Asn Leu Leu Ile Asn Gly Asn Ala Tyr Val Asn Ala Lys Ala Asp
 100 105 110

Gln Met Asp Pro Gln Glu Val Met Ile Lys Gln Ile Tyr Ser Asn Leu
115 120 125

Phe Ala Asp His Val Tyr Ser Lys Ser Pro Lys Gly Asp Ala Ala Gln
130 135 140

Val Val Thr Met Thr Leu Ala Pro Arg Ala Asn Ser Ala Asp Ile His
145 150 155 160

His Thr Gly Gly Arg Leu Glu His Ala Ser Arg Gly Pro Asn Ser Pro
165 170 175

Tyr Ser Glu Ser Tyr
180 181